*SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006, as amended*

# *METHANOL*

Version 4.0 Print Date 26.03.2026

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## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1. Product identifier

| | | |
|---|---|---|
| Trade name | : | METHANOL |
| Substance name | : | methanol |
| Index-No. | : | 603-001-00-X |
| CAS-No. | : | 67-56-1 |
| EC-No. | : | 200-659-6 |
| EU REACH-Reg. No. | : | 01-2119433307-44-xxxx |

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

| | | |
|---|---|---|
| Use of the Substance/Mixture | : | Identified use: See table in front of appendix for a complete overview of identified uses. |
| Uses advised against | : | At this moment we have not identified any uses advised against |
| Remarks | : | Before referring to any Exposure Scenario attached to this Safety Data Sheet please check the grade of the product: the Exposure Scenarios presented are not related to all product grade |

### 1.3. Details of the supplier of the safety data sheet

| | | |
|---|---|---|
| Company | : | Brenntag N.V.<br>Nijverheidslaan 38<br>BE 8540 Deerlijk |
| Telephone | : | +32 (0)56 77 6944 |
| Telefax | : | +32 (0)56 77 5711 |
| E-mail address | : | info@brenntag.be |
| Responsible/issuing person | : | Master Data Administration |
| Company | : | Brenntag Nederland B.V.<br>Donker Duyvisweg 44<br>NL 3316 BM Dordrecht |
| Telephone | : | +31 (0)78 65 44 944 |
| Telefax | : | +31 (0)78 65 44 919 |
| E-mail address | : | info@brenntag.nl |
| Responsible/issuing person | : | Master Data Administration |

### 1.4. Emergency telephone number

| | | |
|---|---|---|
| Emergency telephone number | : | Belgium: Antipoison Center - Brussels TEL: +32(0)70 245 245<br><br>Netherland: National Poisoning Information Center - Bilthoven TEL: +31(0) 88 755 8000 (Only for the purpose of informing medical personnel in cases of acute intoxications) |

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

**Classification according to Regulation (EC) No 1272/2008**

| REGULATION (EC) No 1272/2008 | | | |
|---|---|---|---|
| **Hazard class** | **Hazard category** | **Target Organs** | **Hazard statements** |
| Flammable liquids | Category 2 | --- | H225 |
| Acute toxicity (Inhalation) | Category 3 | --- | H331 |
| Acute toxicity (Dermal) | Category 3 | --- | H311 |
| Acute toxicity (Oral) | Category 3 | --- | H301 |
| Specific target organ toxicity - single exposure | Category 1 | --- | H370 |

For the full text of the H-Statements mentioned in this Section, see Section 16.

**Most important adverse effects**

| | | |
|---|---|---|
| Human Health | : | See section 11 for toxicological information. |
| Physical and chemical hazards | : | See section 9/10 for physicochemical information. |
| Potential environmental effects | : | See section 12 for environmental information. |

### 2.2. Label elements

**Labelling according to Regulation (EC) No 1272/2008**

Hazard symbols :

Signal word : Danger

Hazard statements :

| | |
|---|---|
| H225 | Highly flammable liquid and vapour. |
| H301 + H311 + H331 | Toxic if swallowed, in contact with skin or if inhaled. |
| H370 | Causes damage to organs (Eyes, Central nervous system). |

| | | | |
|---|---|---|---|
| Precautionary statements | | | |
| Prevention | : | P210 | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. |
| | | P260 | Do not breathe dust/ fume/ gas/ mist/ vapours/ spray. |
| | | P280 | Wear protective gloves/ eye protection/ face protection. |
| Response | : | P301 + P310 + P330 | IF SWALLOWED: Immediately call a POISON CENTER/doctor. Rinse mouth. |
| | | P308 + P311 | IF exposed or concerned: Call a POISON CENTER/doctor. |
| | | P370 + P378 | In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish. |
| Storage | : | P403 + P233 | Store in a well-ventilated place. Keep container tightly closed. |

**Hazardous components which must be listed on the label:**

- methanol

### 2.3. Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

May be fatal or cause blindness if swallowed.

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

Chemical nature : Substance

| | Classification (REGULATION (EC) No 1272/2008) |
|---|---|

| Hazardous components | Amount [%] | Hazard class / Hazard category | Hazard statements |
|---|---|---|---|
| **methanol**<br>Index-No. : 603-001-00-X<br>CAS-No. : 67-56-1<br>EC-No. : 200-659-6<br>EU REACH-Reg. No. : 01-2119433307-44-xxxx | >= 90 - <= 100 | Flam. Liq.2<br>Acute Tox.3 Inhalation<br>Acute Tox.3 Dermal<br>Acute Tox.3 Oral<br>STOT SE1<br>---<br>specific concentration limit<br>STOT SE 2; H371<br>3 - < 10 %<br>STOT SE 1; H370<br>>= 10 %<br>---<br>Acute toxicity estimate<br>Acute oral toxicity: 100 mg/kg<br>Acute inhalation toxicity (vapour): 3 mg/l<br>Acute dermal toxicity: 300 mg/kg | H225<br>H331<br>H311<br>H301<br>H370 |

For the full text of the H-Statements mentioned in this Section, see Section 16.

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

General advice : Remove from exposure, lie down. Take off all contaminated clothing immediately.

If inhaled : Remove to fresh air. If breathing is irregular or stopped, administer artificial respiration. Oxygen, if needed. No artificial respiration, mouth-to-mouth or mouth to nose. Use suitable instruments/apparatus. Call a physician immediately.

In case of skin contact : Wash off immediately with soap and plenty of water. Call a physician immediately.

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 5 minutes. If eye irritation persists, consult a specialist.

If swallowed : Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Keep patient warm and at rest. If a person vomits when lying on his back, place him in the recovery position. Call a physician immediately.

Protection of First Aid Responders : First Aid responders should pay attention to self-protection and use the recommended protective clothing.

### 4.2. Most important symptoms and effects, both acute and delayed

| | | |
|---|---|---|
| Symptoms | : | Effects of breathing high concentrations of vapour may include:; respiratory tract irritation; , Ingestion may provoke the following symptoms:; Gastrointestinal discomfort; , Nausea; , Vomiting; , Stomach pain; , Headache; , giddiness; , See Section 11 for more detailed information on health effects and symptoms.; |
| Effects | : | Risk of blindness! Danger by skin absorption. See Section 11 for more detailed information on health effects and symptoms. |

**4.3. Indication of any immediate medical attention and special treatment needed**

| | | |
|---|---|---|
| Treatment | : | Administer approx. 100 ml ethanol 40 % (hard liquor).Treat symptomatically. |

## SECTION 5: Firefighting measures

**5.1. Extinguishing media**

| | | |
|---|---|---|
| Suitable extinguishing media | : | Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. |
| Unsuitable extinguishing media | : | High volume water jet |

**5.2. Special hazards arising from the substance or mixture**

| | | |
|---|---|---|
| Specific hazards during firefighting | : | Highly flammable, The vapour may be invisible, heavier than air and spread along ground, Vapours may form explosive mixtures with air. Flash back possible over considerable distance. |
| Hazardous combustion products | : | Carbon oxides |

**5.3. Advice for firefighters**

| | | |
|---|---|---|
| Special protective equipment for firefighters | : | In the event of fire, wear self-contained breathing apparatus.Wear appropriate body protection (full protective suit) |
| Specific extinguishing methods | : | Control smoke with water spray. |
| Further advice | : | Cool closed containers exposed to fire with water spray.Heating will cause a pressure rise - with risk of bursting.Collect contaminated fire extinguishing water separately. This must not be discharged into drains.Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. |

## SECTION 6: Accidental release measures

**6.1. Personal precautions, protective equipment and emergency procedures**

| | | |
|---|---|---|
| Personal precautions | : | Keep people away from and upwind of spill/leak. Use personal |

protective equipment. Avoid contact with the skin and the eyes. Do not breathe vapours or spray mist. Wear respiratory protection.

### 6.2. Environmental precautions

| | | |
|---|---|---|
| Environmental precautions | : | Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration. If the product contaminates rivers and lakes or drains inform respective authorities. If material reaches soil inform authorities responsible for such cases. |

### 6.3. Methods and materials for containment and cleaning up

| | | |
|---|---|---|
| Methods and materials for containment and cleaning up | : | Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders). Keep in suitable, closed containers for disposal. |
| Further information | : | Treat recovered material as described in the section "Disposal considerations". |

### 6.4. Reference to other sections

See Section 1 for emergency contact information.
See Section 8 for information on personal protective equipment.
See Section 13 for waste treatment information.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

| | | |
|---|---|---|
| Advice on safe handling | : | Keep container tightly closed. Use personal protective equipment. Handle product only in closed system or provide appropriate exhaust ventilation at machinery. Avoid contact with skin, eyes and clothing. Do not breathe vapours or spray mist. Use respirator with appropriate filter if vapours or aerosol are released. Emergency eye wash fountains and emergency showers should be available in the immediate vicinity. |
| Hygiene measures | : | Keep away from food, drink and animal feedingstuffs. Smoking, eating and drinking should be prohibited in the application area. Wash hands before breaks and at the end of workday. Take off all contaminated clothing immediately. Keep working clothes separately. |

### 7.2. Conditions for safe storage, including any incompatibilities

| | | |
|---|---|---|
| Requirements for storage areas and containers | : | Store in original container. Keep locked up or in an area accessible only to qualified or authorised persons. Suitable materials for containers: Stainless steel; Unsuitable materials for containers: Aluminium; Lead; Zinc; polystyrene |

| | | |
|---|---|---|
| Advice on protection against fire and explosion | : | Combustible liquid. Keep away from sources of ignition - No smoking. Vapours are heavier than air and may spread along floors. Vapours may form explosive mixtures with air. Take measures to prevent the build up of electrostatic charge. Use only in an area containing explosion proof equipment. |
| Further information on storage conditions | : | Keep tightly closed in a dry and cool place. Keep in a well-ventilated place. |
| Advice on common storage | : | Keep away from food, drink and animal feedingstuffs. Do not store together with oxidizing and self-igniting products. |

### 7.3. Specific end use(s)

| | | |
|---|---|---|
| Specific use(s) | : | Identified use: See table in front of appendix for a complete overview of identified uses. |

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

| **Component:** | **methanol** | **CAS-No. 67-56-1** |
|---|---|---|

**Derived No Effect Level (DNEL)/Derived Minimal Effect Level (DMEL)**

| | | |
|---|---|---|
| DNEL | | |
| Workers, short-term, Long-term - systemic effects, Skin contact | : | 20 mg/kg bw/day |
| DNEL | | |
| Workers, short-term, Long-term - systemic effects, Inhalation | : | 130 mg/m3 |
| DNEL | | |
| Workers, short-term, Long-term - local effects, Inhalation | : | 130 mg/m3 |
| DNEL | | |
| Consumers, short-term, Long-term - systemic effects, Skin contact | : | 4 mg/kg bw/day |
| DNEL | | |
| Consumers, short-term, Long-term - systemic effects, Inhalation | : | 26 mg/m3 |
| DNEL | | |
| Consumers, short-term, Long-term - systemic effects, Ingestion | : | 4 mg/kg bw/day |
| DNEL | | |
| Consumers, short-term, Long-term - local effects, Inhalation | : | 26 mg/m3 |

**Predicted No Effect Concentration (PNEC)**

| | | |
|---|---|---|
| Fresh water | : | 20 mg/l |
| Marine water | : | 2,08 mg/l |
| Sewage treatment plant (STP) | : | 100 mg/l |
| Marine sediment | : | 7,7 mg/kg dry weight (d.w.) |
| Soil | : | 100 mg/kg wwt |

**Other Occupational Exposure Limit Values**

EU. Indicative Occupational Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU, 2017/164/EU, as amended, Time Weighted Average (TWA):
200 ppm, 260 mg/m3
Indicative

Belgium. OELs. Exposure Limit Values to Chemical Substances at Work, Code of Well-being at work, Book VI, Title 1, as amended, Time Weighted Average (TWA):
200 ppm, 266 mg/m3

Belgium. OELs. Exposure Limit Values to Chemical Substances at Work, Code of Well-being at work, Book VI, Title 1, as amended, Skin designation:
Can be absorbed through the skin.

Belgium. OELs. Exposure Limit Values to Chemical Substances at Work, Code of Well-being at work, Book VI, Title 1, as amended, Short Term Exposure Limit (STEL):
250 ppm, 333 mg/m3, (15 minutes)

Netherlands. OELs (binding) per Annex XIII of Working Conditions Regulation, as amended, Skin designation:
Can be absorbed through the skin.

Netherlands. OELs (binding) per Annex XIII of Working Conditions Regulation, as amended, Time Weighted Average (TWA):
133 mg/m3

EU. Indicative Occupational Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU, 2017/164/EU, as amended, Time Weighted Average (TWA):
200 ppm, 260 mg/m3
Indicative

## 8.2. Exposure controls

**Appropriate engineering controls**

Refer to protective measures listed in sections 7 and 8.

**Personal protective equipment**

*Respiratory protection*

Advice : In case of brief exposure or low pollution use breathing filter

apparatus.
Recommended Filter type:AX
In case of intensive or longer exposure use self-contained breathing apparatus.
Equipment should conform to EN 14387

*Hand protection*

| | | |
|---|---|---|
| Advice | : | Protective gloves complying with EN 374.<br>Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves.<br>Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.<br>Protective gloves should be replaced at first signs of wear. |
| Material | : | butyl-rubber |
| Break through time | : | >= 8 h |
| Glove thickness | : | 0,5 mm |

| | | |
|---|---|---|
| Material | : | Fluorinated rubber |
| Break through time | : | >= 4 h |
| Glove thickness | : | 0,4 mm |

| | | |
|---|---|---|
| Material | : | polychloroprene |
| Break through time | : | >= 1 h |
| Glove thickness | : | 0,5 mm |

*Eye protection*

| | | |
|---|---|---|
| Advice | : | Goggles giving complete protection to the eyes |

*Skin and body protection*

| | | |
|---|---|---|
| Protecting Clothes | : | Solvent resistant protective clothing |

**Environmental exposure controls**

| | | |
|---|---|---|
| General advice | : | Do not flush into surface water or sanitary sewer system.<br>Avoid subsoil penetration.<br>If the product contaminates rivers and lakes or drains inform respective authorities.<br>If material reaches soil inform authorities responsible for such cases. |

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

| | | |
|---|---|---|
| Form | : | liquid |
| Physical state | : | liquid |
| Colour | : | colourless |
| Odour | : | alcohol-like |
| Odour Threshold | : | No data available |

| | | |
|---|---|---|
| Freezing point/range | : | ca. -98 °C |
| Boiling point/boiling range | : | 64,7 °C |
| Flammability (solid, gas) | : | Not applicable |
| Upper explosion limit / Upper flammability limit | : | 44 %(V) |
| Lower explosion limit / Lower flammability limit | : | 5,5 %(V) |
| Flash point | : | 9 - 12 °C |
| Auto-ignition temperature | : | > 455 °C |
| Decomposition temperature | : | No data available |
| Self-Accelerating decomposition temperature (SADT) | : | No data available |
| pH | : | not determined |
| Viscosity | | |
| Viscosity, dynamic | : | 0,544 - 0,59 mPa.s (25 °C) |
| Viscosity, kinematic | : | No data available |
| Flow time | : | No data available |
| Solubility(ies) | | |
| Water solubility | : | completely miscible |
| Solubility in other solvents | : | No data available |
| Dissolution Rate | : | No data available |
| Partition coefficient: n-octanol/water | : | log Pow: -0,77 |
| Dispersion Stability | : | No data available |
| Vapour pressure | : | 128 hPa (20 °C) |
| Relative density | : | No data available |
| Density | : | 0,79 g/cm3 (20 °C) |
| Bulk density | : | No data available |
| Relative vapour density | : | 1,1 (20 °C) |
| Particle characteristics | | |
| Particle size | : | Not applicable |

**9.2 Other information**

| | | |
|---|---|---|
| Explosives | : | Product is not explosive. |
| Oxidizing properties | : | not oxidising |
| Evaporation rate | : | 5,3<br>(ether = 1)<br><br>2,1<br>(Butyl Acetate = 1) |

## SECTION 10: Stability and reactivity

**10.1. Reactivity**

Advice : No decomposition if stored and applied as directed.

**10.2. Chemical stability**

Advice : Stable under recommended storage conditions.

**10.3. Possibility of hazardous reactions**

Hazardous reactions : Vapours may form explosive mixture with air.

**10.4. Conditions to avoid**

Conditions to avoid : Heat, flames and sparks.
Thermal decomposition : No data available

**10.5. Incompatible materials**

Materials to avoid : Keep away from strong oxidizing agents and strong reducing agents. Aluminium, Lead, Magnesium, Alkali metals

**10.6. Hazardous decomposition products**

Hazardous decomposition products : In case of fire hazardous decomposition products may be produced such as: Carbon oxides, Formaldehyde

## SECTION 11: Toxicological information

**11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008**

| Component: | methanol | CAS-No. 67-56-1 |
|---|---|---|
| **Acute toxicity** | | |
| **Oral** | | |
| Toxic if swallowed. | | |
| **Inhalation** | | |

Toxic if inhaled.

**Dermal**

Toxic in contact with skin.

**Irritation**

**Skin**

| | | |
|---|---|---|
| Result | : | No skin irritation (Rabbit) (BASF - Test) |

**Eyes**

| | | |
|---|---|---|
| Result | : | No eye irritation (Rabbit) (OECD Test Guideline 405) |

**Sensitisation**

| | | |
|---|---|---|
| Result | : | not sensitizing (Maximisation Test; Guinea pig) (OECD Test Guideline 406) |

**CMR effects**

**CMR Properties**

| | | |
|---|---|---|
| Carcinogenicity | : | Animal testing did not show any carcinogenic effects. |
| Mutagenicity | : | In vitro tests did not show mutagenic effects<br>In vivo tests did not show mutagenic effects |
| Teratogenicity | : | Not classified due to data which are conclusive although insufficient |
| Reproductive toxicity | : | Not classified due to data which are conclusive although insufficient |

**Specific Target Organ Toxicity**

**Single exposure**

| | | |
|---|---|---|
| Remarks | : | Target Organs: Eyes, Central nervous systemCauses damage to organs.Experience with human exposure |

**Repeated exposure**

| | | |
|---|---|---|
| Remarks | : | The substance or mixture is not classified as specific target organ toxicant, repeated exposure. |

**Other toxic properties**

| Aspiration hazard |
|---|
| No aspiration toxicity classification, |

| Further information | | |
|---|---|---|
| Other relevant toxicity information | : | Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.<br>Danger by skin absorption.<br>Effects due to ingestion may include:<br>Risk of blindness!<br>Vomiting<br>Nausea<br>Coma |

### 11.2. Information on other hazards

| Data for the product | | |
|---|---|---|
| **Endocrine disrupting properties** | | |
| Assessment Endocrine Disrupting Properties | : | The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher. |

| Component: | methanol | CAS-No. 67-56-1 |
|---|---|---|
| **Endocrine disrupting properties** | | |
| Assessment Endocrine Disrupting Properties | : | The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher. |

## SECTION 12: Ecological information

### 12.1. Toxicity

| Component: | methanol | CAS-No. 67-56-1 |
|---|---|---|
| **Acute toxicity** | | |
| **Fish** | | |

| | | |
|---|---|---|
| LC50 | : | 15.400 mg/l (Lepomis macrochirus; 96 h) (flow-through test; EPA 600/3-75/009) |

**Toxicity to daphnia and other aquatic invertebrates**

| | | |
|---|---|---|
| EC50 | : | > 1.000 mg/l (Daphnia magna (Water flea); 48 h) (OECD Test Guideline 202) |

**algae**

| | | |
|---|---|---|
| EC50 | : | 22000 mg/l (Pseudokirchneriella subcapitata (green algae); 96 h) |

**Bacteria**

| | | |
|---|---|---|
| EC50 | : | 20000 mg/l (Bacteria; 15 h) |
| IC50 | | 1000 mg/l (Bacteria; 24 h) |
| IC50 | | > 1000 mg/l (activated sludge; 3 h) |

### 12.2. Persistence and degradability

| Component: | methanol | CAS-No. 67-56-1 |
|---|---|---|

**Persistence and degradability**

**Persistence**

| | | |
|---|---|---|
| Result | : | study scientifically unjustified |

**Biodegradability**

| | | |
|---|---|---|
| Result | : | 97 % (Marine water; Exposure Time: 20 d)Readily biodegradable. |
| Result | : | 95 % (Fresh water; Exposure Time: 20 d) |
| Result | : | 83 - 91 % (Fresh water sediment; Exposure Time: 3 d) |
| Result | : | 71,5 % (Fresh water; Exposure Time: 5 d) |
| Result | : | 69 % (Marine water; Exposure Time: 5 d) |
| Result | : | 46,3 - 53,5 % (Soil; Exposure Time: 5 d) |

### 12.3. Bioaccumulative potential

| Component: | methanol | CAS-No. 67-56-1 |
|---|---|---|

**Bioaccumulation**

| | | |
|---|---|---|
| Result | : | log Kow -0,77 |
| | : | BCF: < 10; The product has low potential bioaccumulation. |

**12.4. Mobility in soil**

| Component: | methanol | CAS-No. 67-56-1 |
|---|---|---|
| | **Mobility** | |

: The product is mobile in water enviroment.

**12.5. Results of PBT and vPvB assessment**

| Data for the product | | |
|---|---|---|
| | **Results of PBT and vPvB assessment** | |

| | | |
|---|---|---|
| Result | : | This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher. |

| Component: | methanol | CAS-No. 67-56-1 |
|---|---|---|
| | **Results of PBT and vPvB assessment** | |

| | | |
|---|---|---|
| Result | : | Not persistent, bioaccumulative, and toxic (PBT)., Not very persistent and very bioaccumulative (vPvB). |

**12.6. Endocrine disrupting properties**

| Data for the product | | |
|---|---|---|
| Assessment Endocrine Disrupting Properties | : | The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher. |

| Component: | methanol | CAS-No. 67-56-1 |
|---|---|---|
| Assessment Endocrine Disrupting Properties | : | The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher. |

**12.7. Other adverse effects**

| Component: | methanol | CAS-No. 67-56-1 |
|---|---|---|

**Additional ecological information**

Result : Do not flush into surface water or sanitary sewer system.
Avoid subsoil penetration.
Danger to drinking water if even extremely small quantities leak into soil.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Product : Disposal together with normal waste is not allowed. Special disposal required according to local regulations. Do not let product enter drains. Contact waste disposal services. This product shall be disposed of or recovered in compliance with Directive 2008/98/EC on waste as lastly amended.

Contaminated packaging : Empty remaining contents. Packagings that cannot be cleaned are to be disposed of in the same manner as the product. Dispose of in accordance with local regulations.

European Waste Catalogue Number : No waste code according to the European Waste Catalogue can be assigned for this product, as the intended use dictates the assignment. The waste code is established in consultation with the regional waste disposer.

## SECTION 14: Transport information

### 14.1. UN number or ID number

1230

### 14.2. UN proper shipping name

**ADR** : METHANOL
**RID** : METHANOL
**IMDG** : METHANOL
**IATA_C** : METHANOL
**IATA_P** : METHANOL

### 14.3. Transport hazard class(es)

ADR-Class : 3
(Labels; Classification Code; Hazard Identification Number; Tunnel restriction code) 3, 6.1; FT1; 336; (D/E)

RID-Class : 3
(Labels; Classification Code; Hazard Identification Number) 3, 6.1; FT1; 336

IMDG-Class : 3

| | |
|---|---|
| (Labels; EmS) | 3, 6.1; F-E, S-D |
| IATA_C-Class | : 3 |
| (Labels) | 3, 6.1 |
| IATA_P-Class | : 3 |
| (Labels) | 3, 6.1 |

**14.4. Packaging group**

| | |
|---|---|
| ADR | : II |
| RID | : II |
| IMDG | : II |
| IATA_C | : II |
| IATA_P | : II |

**14.5. Environmental hazards**

| | |
|---|---|
| Environmentally hazardous according to ADR | : no |
| Environmentally hazardous according to RID | : no |
| Marine Pollutant according to IMDG-Code | : no |
| *Environmentally hazardous according to IATA* | *: no* |
| *Environmentally hazardous according to IATA* | *: no* |

**14.6. Special precautions for user**

Not applicable.

**14.7 Maritime transport in bulk according to IMO instruments**

Not applicable for product as supplied.

## SECTION 15: Regulatory information

**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

**Data for the product**

| | | |
|---|---|---|
| Other regulations | : | Pregnant and nursing women may not be exposed to the product. Take in consideration the national regulation. Exposure limits in accordance to local regulations SDS updated according to Regulation (EU) 2020/878 |

**Component: methanol CAS-No. 67-56-1**

| | | |
|---|---|---|
| EU. Chemicals Subject to Export Notification: Annex 1, Part 1, Regulation 649/2012/EU on export and import of | : | ; The substance/mixture does not fall under this legislation. |

| | | |
|---|---|---|
| dangerous chemicals, as amended | | |
| EU. REACH, Annex XVII, Restrictions on manufacture, placing on the market and use of certain dangerous substances, 1907/2006/EC, as amended | : | Point Nos.: , 3; Listed |
| | | Point Nos.: , 40; Listed<br>Point Nos.: , 69; Listed<br>Point Nos.: , 75; Listed |
| EU. Restricted Substances: Annex III, Regulation 1223/2009/EC on Cosmetic Products, as amended | : | Maximum concentration in ready for use preparation: 5 %; Denaturant for ethanol and isopropyl alcohol; See the text of the regulation for applicable exceptions or provisions. |
| EU. Directive 2012/18/EU (SEVESO III) on major accident hazards involving dangerous substances, Annex I | : | Qualifying quantity for the application of Lower-tier requirements: 500 tonnes; Part 2: Named dangerous substances; List ID 22: Methanol |
| | | Qualifying quantity for the application of Upper-tier requirements: 5.000 tonnes; Part 2: Named dangerous substances; List ID 22: Methanol |

**Notification status methanol:**

| Regulatory List | Notification | Notification number |
|---|---|---|
| AICS | YES | |
| DSL | YES | |
| EINECS | YES | 200-659-6 |
| ENCS (JP) | YES | (2)-201 |
| IECSC | YES | |
| INSQ | YES | |
| ISHL (JP) | YES | (2)-201 |
| JEX (JP) | YES | (2)-201 |
| KECI (KR) | YES | 97-1-80 |
| KECI (KR) | YES | KE-23193 |
| NZIOC | YES | HSR001186 |
| ONT INV | YES | |

| | | |
|---|---|---|
| PICCS (PH) | YES | |
| TCSI | YES | |
| TH INV | YES | 2905.11 |
| TH INV | YES | 55-1-05308 |
| TSCA | YES | |
| VN INVL | YES | |

### 15.2. Chemical safety assessment

A Chemical Safety Assessment has been carried out for this substance.

## SECTION 16: Other information

**Full text of H-Statements referred to under sections 2 and 3.**

| | |
|---|---|
| H225 | Highly flammable liquid and vapour. |
| H301 | Toxic if swallowed. |
| H311 | Toxic in contact with skin. |
| H331 | Toxic if inhaled. |
| H370 | Causes damage to organs. |

**Full text of the Notes referred to under section 3.**

**Abbreviations and Acronyms**

| | |
|---|---|
| **AU AIICL** | Australia. Industrial Chemicals Act (AIIC) List |
| **BCF** | bioconcentration factor |
| **BOD** | biochemical oxygen demand |
| **CAS** | Chemical Abstracts Service |
| **CLP** | Classification, Labelling and Packaging |
| **CMR** | carcinogenic, mutagenic or toxic to reproduction |
| **COD** | chemical oxygen demand |
| **DNEL** | derived no-effect level |
| **DSL** | Canada. Environmental Protection Act, Domestic Substances List |
| **EINECS** | European Inventory of Existing Commercial Chemical Substances |
| **ELINCS** | European List of Notified Chemical Substances |
| **ENCS (JP)** | Japan. Kashin-Hou Law List |
| **GHS** | Globally Harmonized System of Classification and Labelling of Chemicals |
| **IECSC** | China. Inventory of Existing Chemical Substances |
| **INSQ** | Mexico. National Inventory of Chemical Substances |
| **ISHL (JP)** | Japan. Inventory of Industrial Safety & Health |
| **KECI (KR)** | Korea. Existing Chemicals Inventory |
| **LC50** | median lethal concentration |

| | |
|---|---|
| **LOAEC** | lowest observed adverse effect concentration |
| **LOAEL** | lowest observed adverse effect level |
| **LOEL** | lowest observed effect level |
| **NDSL** | Canada. Environmental Protection Act. Non-Domestic Substances List |
| **NLP** | no-longer polymer |
| **NOAEC** | no observed adverse effect concentration |
| **NOAEL** | no observed adverse effect level |
| **NOEC** | no observed effect concentration |
| **NOEL** | no observed effect level |
| **NZIOC** | New Zealand. Inventory of Chemicals |
| **OECD** | Organisation for Economic Cooperation and Development |
| **OEL** | occupational exposure limit |
| **ONT INV** | Canada. Ontario Inventory List |
| **PBT** | persistent, bioaccumulative and toxic |
| **PHARM (JP)** | Japan. Pharmacopoeia Listing |
| **PICCS (PH)** | Philippines. Inventory of Chemicals and Chemical Substances |
| **PNEC** | predicted no-effect concentration |
| **REACH Auth. No.:** | REACH Authorisation Number |
| **REACH AuthAppC. No.** | REACH Authorisation Application Consultation Number |
| **UK REACH Auth. No.:** | UK REACH Authorisation Number |
| **UK REACH AuthAppC. No.** | UK REACH Authorisation Application Consultation Number |
| **UK REACH-Reg.No** | UK REACH Registration Number |
| **STOT** | specific target organ toxicity |
| **SPM** | Synthetic Polymer Microparticles |
| **SVHC** | substance of very high concern |
| **TCSI** | Taiwan. Existing Chemicals Inventory |
| **TH INV** | Thailand. Existing Chemicals Inventory from FDA |
| **TSCA** | US. Toxic Substances Control Act |
| **UVCB** | substance of unknown or variable composition, complex reaction products or biological materials |
| **VN INVL** | Vietnam. National Chemical Inventory |

**Further information**

| | | |
|---|---|---|
| Key literature references and sources for data | : | Supplier information and data from the "Database of registered substances" of the European Chemicals Agency (ECHA) were used to create this safety data sheet. |
| Methods used for product classification | : | The classification for human health, physical and chemical hazards and environmental hazards were derived from a combination of calculation methods and if available test data. |
| Hints for trainings | : | The workers have to be trained regularly on the safe handling of the products based on the information provided in the Safety |

Data Sheet and the local conditions of the workplace. National regulations for the training of workers in the handling of hazardous materials must be adhered to.

Other information : The information provided in this Safety Data Sheet is correct to our knowledge at the date of its revision. The information given only describes the products with regard to safety arrangements and is not to be considered as a warranty or quality specification and does not constitute a legal relationship.

The information contained in this Safety Data Sheet relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

|| Indicates updated section.

| No. | Short title | Main User Group (SU) | Sector of Use (SU) | Product Category (PC) | Process Category (PROC) | Environmental Release Category (ERC) | Article Category (AC) | Specified |
|---|---|---|---|---|---|---|---|---|
| 1 | Manufacture of substance | 3 | 8, 9 | NA | 1, 2, 3, 4, 8a, 8b, 15 | 1, 4 | NA | ES1740 |
| 2 | Use as an intermediate | 3 | 8, 9 | NA | 1, 2, 3, 4, 8a, 8b, 15 | 6a, 6b | NA | ES1746 |
| 3 | Distribution of substance | 3 | 8, 9 | NA | 1, 2, 3, 4, 8a, 8b, 9 | 1, 2 | NA | ES1749 |
| 4 | Formulation & (re)packing of substances and mixtures | 3 | 10 | NA | 1, 2, 3, 4, 5, 8a, 8b, 9, 14, 15 | 2 | NA | ES20237 |
| 5 | Use in cleaning agents | 3 | NA | NA | 1, 2, 3, 4, 7, 8a, 8b, 10, 13 | 4 | NA | ES1798 |
| 6 | Use in cleaning agents | 22 | NA | NA | 1, 2, 3, 4, 8a, 8b, 10, 11, 13 | 8a, 8d | NA | ES1801 |
| 7 | Use in cleaning agents | 21 | NA | 35 | NA | 8a, 8d | NA | ES1831 |
| 8 | Use in fuel | 3 | 10 | NA | 1, 2, 3, 8a, 8b, 16 | 7 | NA | ES1803 |
| 9 | Use in fuel | 22 | NA | NA | 1, 2, 3, 8a, 8b, 16 | 8b, 8e, 9a, 9b | NA | ES1806 |
| 10 | Use in fuel | 21 | NA | 13 | NA | 8b, 8e, 9a, 9b | NA | ES1834 |
| 11 | Use in laboratories | 3 | NA | NA | 10, 15 | 4 | NA | ES1813 |
| 12 | Use in laboratories | 22 | NA | NA | 10, 15 | 8a | NA | ES1827 |
| 13 | Use in de-icing and anti-icing applications | 21 | NA | 4 | NA | 8a, 8d | NA | ES1837 |
| 14 | Use as water treatment chemicals | 3 | NA | NA | 2 | 4, 6b | NA | ES2315 |
| 15 | Use in oil and gas field drilling and production operations | 22 | NA | NA | 4, 5, 8a, 8b | 9b | NA | ES1840 |
| 16 | Use in oil and gas field drilling and production operations | 3 | NA | NA | 1, 2, 3, 4, 5, 8a, 8b | 4 | NA | ES1842 |

| **1. Short title of Exposure Scenario 1: Manufacture of substance** | | |
|---|---|---|
| Main User Groups | SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites | |
| Sectors of end-use | SU8: Manufacture of bulk, large scale chemicals (including petroleum products)<br>SU9: Manufacture of fine chemicals | |
| Process categories | PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions<br>PROC2: Use in closed, continuous process with occasional controlled exposure<br>PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition<br>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises<br>PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities<br>PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities<br>PROC15: Use as laboratory reagent | |
| Environmental Release Categories | ERC1: Manufacture of substances<br>ERC4: Industrial use of processing aids in processes and products, not becoming part of articles | |
| Activity | Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling/ recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities. | |
| **2.1 Contributing scenario controlling environmental exposure for: ERC1, ERC4** | | |
| No exposure assessment presented for the environment | | |
| **2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Covers percentage substance in the product up to 100 %. |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | > 10 kPa |
| Frequency and duration of use | Covers daily exposures up to 8 hours | |
| Human factors not influenced by risk management | Exposed skin area | One hand, face side only. 240 cm² (PROC1, PROC3, PROC15) |
| | Exposed skin area | Two hands face side only. 480 cm² (PROC2, PROC4, PROC8b) |
| | Exposed skin area | Two hands 960 cm² (PROC8a) |
| Other operational conditions affecting workers exposure | Assumes use at not more than 20°C above ambient temperature. | |

| | | |
|---|---|---|
| Technical conditions and measures to control dispersion from source towards the worker | General exposures<br>Closed systems<br>With sample collection with occasional controlled exposure | Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC2) |
| | General exposures<br>Closed systems<br>Use in contained batch processes | Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC3) |
| | General exposures<br>Open systems<br>Batch process<br>With sample collection | Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC4) |
| | Process sampling | Provide extraction ventilation at points where emissions occur.<br>Use a sampling system designed to control exposure.(PROC2, PROC3, PROC4, PROC8a, PROC8b) |
| | Laboratory activities | Handle in a fume cupboard or under extract ventilation. (Efficiency: 90 %)(PROC15) |
| | Bulk transfers | Ensure material transfers are under containment or extract ventilation. (Efficiency: 90 %)(PROC8a) |
| | Bulk transfers | Clear transfer lines prior to de-coupling.<br>Ensure material transfers are under containment or extract ventilation. (Efficiency: 97 %)(PROC8b) |
| | Storage<br>with occasional controlled exposure | Avoid dip sampling.<br>Clear transfer lines prior to de-coupling.<br>Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).<br>Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC2) |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear suitable gloves tested to EN374. | |

## 3. Exposure estimation and reference to its source

**Environment**

No exposure assessment presented for the environment.

**Workers**

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15: Use of ECETOC TRA Version 2 with modifications.

| Contributing Scenario | Specific conditions | Exposure routes | Level of Exposure | RCR |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| PROC1, PROC3, PROC15 | --- | worker dermal, short and long term - systemic | 0,34mg/kg bw/day | 0,008 |
| PROC1 | --- | Worker - inhalative, long-term - systemic | 0,01mg/m3 | 0,00004 |
| PROC1 | --- | Worker - inhalative, short-term - systemic | 0,05mg/m3 | 0,0002 |
| PROC2 | --- | worker dermal, short and long term - systemic | 1,37mg/kg bw/day | 0,034 |
| PROC2, PROC15 | --- | Worker - inhalative, long-term - systemic | 6,67mg/m3 | 0,026 |
| PROC2 | --- | Worker - inhalative, short-term - systemic | 26,67mg/m3 | 0,103 |
| PROC3, PROC4, PROC15 | --- | Worker - inhalative, long-term - systemic | 13,33mg/m3 | 0,051 |
| PROC3, PROC4 | --- | Worker - inhalative, short-term - systemic | 53,33mg/m3 | 0,205 |
| PROC4, PROC8b | --- | worker dermal, short and long term - systemic | 6,86mg/kg bw/day | 0,171 |
| PROC8a | --- | worker dermal, short and long term - systemic | 13,71mg/kg bw/day | 0,343 |
| PROC8a | --- | Worker - inhalative, long-term - systemic | 33,33mg/m3 | 0,128 |
| PROC8a | --- | Worker - inhalative, short-term - systemic | 66,67mg/m3 | 0,256 |
| PROC8b | --- | Worker - inhalative, long-term - systemic | 6,00mg/m3 | 0,023 |
| PROC8b | --- | Worker - inhalative, short-term - systemic | 12,00mg/m3 | 0,046 |

## 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Assumes a good basic standard of occupational hygiene is implemented.

| **1. Short title of Exposure Scenario 2: Use as an intermediate** | | |
|---|---|---|
| Main User Groups | SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites | |
| Sectors of end-use | SU8: Manufacture of bulk, large scale chemicals (including petroleum products)<br>SU9: Manufacture of fine chemicals | |
| Process categories | PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions<br>PROC2: Use in closed, continuous process with occasional controlled exposure<br>PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition<br>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises<br>PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities<br>PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities<br>PROC15: Use as laboratory reagent | |
| Environmental Release Categories | ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)<br>ERC6b: Industrial use of reactive processing aids | |
| Activity | Use of substance as an intermediate (not related to Strictly Controlled Conditions). Includes recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container). | |
| **2.1 Contributing scenario controlling environmental exposure for: ERC6a, ERC6b** | | |
| No exposure assessment presented for the environment | | |
| **2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Covers percentage substance in the product up to 100 %. |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | > 10 kPa |
| Frequency and duration of use | Covers daily exposures up to 8 hours | |
| Other operational conditions affecting workers exposure | Assumes use at not more than 20°C above ambient temperature. | |
| Technical conditions and measures to control dispersion from source towards the worker | General exposures<br>Closed systems<br>With sample collection with occasional controlled exposure | Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC2) |

| | |
|---|---|
| General exposures<br>Closed systems<br>Use in contained batch processes | Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC3) |
| General exposures<br>Open systems<br>Batch process<br>With sample collection | Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC4) |
| Process sampling | Provide extraction ventilation at points where emissions occur.(PROC2, PROC3, PROC4, PROC8a, PROC8b) |
| Laboratory activities | Handle in a fume cupboard or under extract ventilation. (Efficiency: 90 %)(PROC15) |
| Bulk transfers | Ensure material transfers are under containment or extract ventilation. (Efficiency: 90 %)(PROC8a) |
| Bulk transfers | Ensure material transfers are under containment or extract ventilation. (Efficiency: 97 %)(PROC8b) |
| Storage<br>with occasional controlled exposure | Provide extraction ventilation at points where emissions occur.(PROC2) |

## 3. Exposure estimation and reference to its source

**Environment**

No exposure assessment presented for the environment.

**Workers**

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15: Use of ECETOC TRA Version 2 with modifications.

| Contributing Scenario | Specific conditions | Exposure routes | Level of Exposure | RCR |
|---|---|---|---|---|
| PROC1, PROC3, PROC15 | --- | worker dermal, short and long term - systemic | 0,34mg/kg bw/day | 0,008 |
| PROC1 | --- | Worker - inhalative, long-term - systemic | 0,01mg/m3 | 0,00004 |
| PROC1 | --- | Worker - inhalative, short-term - systemic | 0,05mg/m3 | 0,0002 |
| PROC2 | --- | worker dermal, short and long term - systemic | 1,37mg/kg bw/day | 0,034 |
| PROC2, PROC15 | --- | Worker - inhalative, long-term - systemic | 6,67mg/m3 | 0,026 |
| PROC2, PROC15 | --- | Worker - inhalative, short-term - systemic | 26,67mg/m3 | 0,103 |

| | | | | |
|---|---|---|---|---|
| PROC3, PROC4 | --- | Worker - inhalative, long-term - systemic | 13,33mg/m3 | 0,051 |
| PROC3, PROC4 | --- | Worker - inhalative, short-term - systemic | 53,33mg/m3 | 0,205 |
| PROC4, PROC8b | --- | worker dermal, short and long term - systemic | 6,86mg/kg bw/day | 0,171 |
| PROC8a | --- | worker dermal, short and long term - systemic | 13,71mg/kg bw/day | 0,343 |
| PROC8a | --- | Worker - inhalative, long-term - systemic | 33,33mg/m3 | 0,128 |
| PROC8a | --- | Worker - inhalative, short-term - systemic | 66,67mg/m3 | 0,256 |
| PROC8b | --- | Worker - inhalative, long-term - systemic | 6,00mg/m3 | 0,023 |
| PROC8b | --- | Worker - inhalative, short-term - systemic | 12,00mg/m3 | 0,046 |

## 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Assumes a good basic standard of occupational hygiene is implemented.

| **1. Short title of Exposure Scenario 3: Distribution of substance** | | |
|---|---|---|
| Main User Groups | SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites | |
| Sectors of end-use | SU8: Manufacture of bulk, large scale chemicals (including petroleum products)<br>SU9: Manufacture of fine chemicals | |
| Process categories | PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions<br>PROC2: Use in closed, continuous process with occasional controlled exposure<br>PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition<br>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises<br>PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities<br>PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities<br>PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) | |
| Environmental Release Categories | ERC1: Manufacture of substances<br>ERC2: Formulation of preparations | |
| Activity | Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading distribution and associated laboratory activities. | |
| **2.1 Contributing scenario controlling environmental exposure for: ERC1, ERC2** | | |
| No exposure assessment presented for the environment | | |
| **2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Covers percentage substance in the product up to 100 %. |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | > 10 kPa |
| Frequency and duration of use | Covers daily exposures up to 8 hours | |
| Human factors not influenced by risk management | Exposed skin area | One hand, face side only. 240 cm² (PROC1, PROC3) |
| | Exposed skin area | Two hands 960 cm² (PROC8a) |
| | Exposed skin area | Two hands face side only. 480 cm² (PROC2, PROC4, PROC8b, PROC9) |
| Other operational conditions affecting workers exposure | Assumes use at not more than 20°C above ambient temperature. | |
| Technical conditions and | General exposures | Provide extract ventilation to points where |

| | | |
|---|---|---|
| measures to control dispersion from source towards the worker | Closed systems<br>With sample collection<br>with occasional<br>controlled exposure | emissions occur. (Efficiency: 90 %)(PROC2) |
| | General exposures<br>Closed systems<br>Use in contained batch processes | Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC3) |
| | General exposures<br>Open systems<br>Batch process<br>With sample collection | Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC4) |
| | Bulk transfers<br>Open systems | Clear transfer lines prior to de-coupling.<br>Ensure material transfers are under containment or extract ventilation. (Efficiency: 97 %)(PROC8b) |
| | Bulk transfers | Clear transfer lines prior to de-coupling.<br>Ensure material transfers are under containment or extract ventilation. (Efficiency: 90 %)(PROC8a) |
| | Drum and small package filling | Put lids on containers immediately after use.<br>Clear spills immediately.<br>Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC9) |
| | Storage<br>with occasional<br>controlled exposure | Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC2) |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear suitable gloves tested to EN374. | |

## 3. Exposure estimation and reference to its source

**Environment**

No exposure assessment presented for the environment.

**Workers**

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9: Use of ECETOC TRA Version 2 with modifications.

| Contributing Scenario | Specific conditions | Exposure routes | Level of Exposure | RCR |
|---|---|---|---|---|
| PROC1, PROC3 | --- | worker dermal, short and long term - systemic | 0,34mg/kg bw/day | 0,008 |
| PROC1 | --- | Worker - inhalative, long-term - systemic | 0,01mg/m3 | 0,00004 |
| PROC1 | --- | Worker - inhalative, short-term - systemic | 0,05mg/m3 | 0,0002 |

| | | | | |
|---|---|---|---|---|
| PROC2 | --- | worker dermal, short and long term - systemic | 1,37mg/kg bw/day | 0,034 |
| PROC2 | --- | Worker - inhalative, long-term - systemic | 6,67mg/m3 | 0,026 |
| PROC2 | --- | Worker - inhalative, short-term - systemic | 26,67mg/m3 | 0,103 |
| PROC3, PROC4 | --- | Worker - inhalative, long-term - systemic | 13,33mg/m3 | 0,051 |
| PROC3, PROC4 | --- | Worker - inhalative, short-term - systemic | 53,33mg/m3 | 0,205 |
| PROC4, PROC8b, PROC9 | --- | worker dermal, short and long term - systemic | 6,86mg/kg bw/day | 0,171 |
| PROC8a | --- | worker dermal, short and long term - systemic | 13,71mg/kg bw/day | 0,343 |
| PROC8a | --- | Worker - inhalative, long-term - systemic | 33,33mg/m3 | 0,128 |
| PROC8a | --- | Worker - inhalative, short-term - systemic | 66,67mg/m3 | 0,256 |
| PROC8b | --- | Worker - inhalative, long-term - systemic | 6,00mg/m3 | 0,023 |
| PROC8b | --- | Worker - inhalative, short-term - systemic | 12,00mg/m3 | 0,046 |
| PROC9 | --- | Worker - inhalative, long-term - systemic | 26,67mg/m3 | 0,103 |
| PROC9 | --- | Worker - inhalative, short-term - systemic | 53,34mg/m3 | 0,205 |

## 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Assumes a good basic standard of occupational hygiene is implemented.

| **1. Short title of Exposure Scenario 4: Formulation & (re)packing of substances and mixtures** | |
|---|---|
| Main User Groups | SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites |
| Sectors of end-use | SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys) |
| Process categories | PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions<br>PROC2: Use in closed, continuous process with occasional controlled exposure<br>PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition<br>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises<br>PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)<br>PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities<br>PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities<br>PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)<br>PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation<br>PROC15: Use as laboratory reagent |
| Environmental Release Categories | ERC2: Formulation of preparations |
| Activity | Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tabletting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities. |

| **2.1 Contributing scenario controlling environmental exposure for: ERC2** |
|---|
| No exposure assessment presented for the environment |

| **2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15** | | |
|---|---|---|
| Product characteristics | Concentration of the Substance in Mixture/Article | Covers percentage substance in the product up to 100 %. |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | > 10 kPa |
| Frequency and duration of use | Covers daily exposures up to 8 hours | |
| Human factors not influenced by risk management | Exposed skin area | One hand, face side only. 240 cm² (PROC1, PROC3, PROC15) |

| | | |
|---|---|---|
| | Exposed skin area | Two hands face side only. 480 cm² (PROC2, PROC4, PROC8b, PROC9) |
| | Exposed skin area | Two hands 960 cm² (PROC8a) |
| Other operational conditions affecting workers exposure | Assumes use at not more than 20°C above ambient temperature. | |
| Technical conditions and measures to control dispersion from source towards the worker | General exposures<br>Closed systems<br>With sample collection with occasional controlled exposure | Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC2) |
| | General exposures<br>Closed systems<br>Use in contained batch processes | Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC3) |
| | General exposures<br>Open systems<br>Batch process<br>With sample collection with potential for aerosol generation | Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC4) |
| | Process sampling | Avoid dip sampling.<br>Provide extract ventilation to points where emissions occur.(PROC2, PROC3, PROC4, PROC8a, PROC8b) |
| | Laboratory activities | Handle in a fume cupboard or under extract ventilation. (Efficiency: 90 %)(PROC15) |
| | Bulk transfers | Clear transfer lines prior to de-coupling.<br>Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC8a) |
| | Bulk transfers | Clear lines prior to de-coupling.<br>Provide extract ventilation to points where emissions occur. (Efficiency: 97 %)(PROC8b) |
| | Drum and small package filling | Put lids on containers immediately after use.<br>Ensure material transfers are under containment or extract ventilation. (Efficiency: 90 %)(PROC9) |
| | Storage<br>with occasional controlled exposure | Avoid dip sampling.<br>Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC2) |
| | Mixing operations (open systems)<br>with potential for aerosol generation | Provide extraction ventilation at points where emissions occur.(PROC5) |
| | Production or preparation or articles by tabletting, compression, extrusion or pelletisation | Provide extraction ventilation at points where emissions occur.(PROC14) |

| | |
|---|---|
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear suitable gloves tested to EN374. |

## 3. Exposure estimation and reference to its source

**Environment**

No exposure assessment presented for the environment.

**Workers**

| Contributing Scenario | Specific conditions | Exposure routes | Level of Exposure | RCR |
|---|---|---|---|---|
| --- | --- | --- | --- | --- |

When existing controls and recommended RMMs are applied, safe use can be concluded.

## 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Assumes a good basic standard of occupational hygiene is implemented.

| **1. Short title of Exposure Scenario 5: Use in cleaning agents** | | |
|---|---|---|
| Main User Groups | SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites | |
| Process categories | PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions<br>PROC2: Use in closed, continuous process with occasional controlled exposure<br>PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition<br>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises<br>PROC7: Industrial spraying<br>PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities<br>PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities<br>PROC10: Roller application or brushing<br>PROC13: Treatment of articles by dipping and pouring | |
| Environmental Release Categories | ERC4: Industrial use of processing aids in processes and products, not becoming part of articles | |
| Activity | Covers the use as a component of cleaning products including pouring/unloading from drums or containers; and exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping automated and by hand). | |
| **2.1 Contributing scenario controlling environmental exposure for: ERC4** | | |
| No exposure assessment presented for the environment | | |
| **2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC13** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Covers percentage substance in the product up to 100 %. |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | > 10 kPa |
| Frequency and duration of use | Covers daily exposures up to 8 hours | |
| Human factors not influenced by risk management | Exposed skin area | One hand, face side only. 240 cm² (PROC1, PROC3) |
| | Exposed skin area | Two hands face side only. 480 cm² (PROC2, PROC4, PROC8b, PROC13) |
| | Exposed skin area | Two hands 960 cm² (PROC8a) |
| Other operational conditions affecting workers exposure | Assumes use at not more than 20°C above ambient temperature. | |
| | Room size | 1000 m3(PROC7) |

| | | |
|---|---|---|
| Technical conditions and measures to control dispersion from source towards the worker | Automated process with (semi) closed systems Use in contained systems | Ensure material transfers are under containment or extract ventilation. (Efficiency: 90 %)(PROC2) |
| | Use in contained batch processes | Provide the operation with a properly sited receiving hood. (Efficiency: 90 %)(PROC3, PROC4) |
| | Bulk transfers | Ensure material transfers are under containment or extract ventilation. (Efficiency: 90 %)(PROC8a) |
| | Filling/ preparation of equipment from drums or containers. Dedicated facility | Ensure material transfers are under containment or extract ventilation. (Efficiency: 97 %)(PROC8b) |
| | Cleaning with high pressure washers | Carry out in a vented booth or extracted enclosure.(PROC7) |
| | Degreasing small objects in cleaning station | Provide the operation with a properly sited receiving hood. (Efficiency: 90 %)(PROC13) |
| Organisational measures to prevent /limit releases, dispersion and exposure | Cleaning with high pressure washers | Clean equipment and the work area every day. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Ensure control measures are regularly inspected and maintained.(PROC7) |

**2.3 Contributing scenario controlling worker exposure for: PROC10**

| | | |
|---|---|---|
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product : 0% - 80% |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | > 10 kPa |
| Frequency and duration of use | Covers daily exposures up to 8 hours | |
| Human factors not influenced by risk management | Exposed skin area | Two hands 960 cm² (PROC10) |
| Technical conditions and measures to control dispersion from source towards the worker | Cleaning with low-pressure washers | Provide the operation with a properly sited receiving hood. (Efficiency: 90 %)(PROC10) |

**3. Exposure estimation and reference to its source**

**Environment**

No exposure assessment presented for the environment.

**Workers**

PROC7: StoffenManager (inhalation exposure)

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC10, PROC13: Use of ECETOC TRA Version 2 with

modifications.

| Contributing Scenario | Specific conditions | Exposure routes | Level of Exposure | RCR |
|---|---|---|---|---|
| PROC1, PROC3 | --- | worker dermal, short and long term - systemic | 0,34mg/kg bw/day | 0,008 |
| PROC1 | --- | Worker - inhalative, long-term - systemic | 0,01mg/m3 | 0,00004 |
| PROC1 | --- | Worker - inhalative, short-term - systemic | 0,05mg/m3 | 0,0002 |
| PROC2 | --- | worker dermal, short and long term - systemic | 1,37mg/kg bw/day | 0,034 |
| PROC2 | --- | Worker - inhalative, long-term - systemic | 6,67mg/m3 | 0,026 |
| PROC2 | --- | Worker - inhalative, short-term - systemic | 26,67mg/m3 | 0,103 |
| PROC3, PROC4 | --- | Worker - inhalative, long-term - systemic | 13,33mg/m3 | 0,051 |
| PROC3, PROC4 | --- | Worker - inhalative, short-term - systemic | 53,33mg/m3 | 0,205 |
| PROC4, PROC8b | --- | worker dermal, short and long term - systemic | 6,86mg/kg bw/day | 0,171 |
| PROC7 | --- | worker inhalation, acute and long term - systemic | 141,1mg/m3 | 0,542 |
| PROC8a, PROC13 | --- | worker dermal, short and long term - systemic | 13,71mg/kg bw/day | 0,343 |
| PROC8a, PROC13 | --- | Worker - inhalative, long-term - systemic | 33,33mg/m3 | 0,128 |
| PROC8a, PROC13 | --- | Worker - inhalative, short-term - systemic | 66,67mg/m3 | 0,256 |
| PROC8b | --- | Worker - inhalative, long-term - systemic | 6,00mg/m3 | 0,023 |
| PROC8b | --- | Worker - inhalative, short-term - systemic | 12,00mg/m3 | 0,046 |
| PROC10 | --- | Worker - inhalative, short-term - systemic | 53,33mg/m3 | 0,205 |
| PROC10 | --- | worker dermal, short and long term - systemic | 21,94mg/kg bw/day | 0,549 |
| PROC10 | --- | Worker - inhalative, long-term - systemic | 26,67mg/m3 | 0,103 |

**4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario**

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Assumes a good basic standard of occupational hygiene is implemented.

Assumes a good basic standard of occupational hygiene is implemented.

| **1. Short title of Exposure Scenario 6: Use in cleaning agents** | | |
|---|---|---|
| Main User Groups | SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen) | |
| Process categories | PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions<br>PROC2: Use in closed, continuous process with occasional controlled exposure<br>PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition<br>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises<br>PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities<br>PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities<br>PROC10: Roller application or brushing<br>PROC11: Non industrial spraying<br>PROC13: Treatment of articles by dipping and pouring | |
| Environmental Release Categories | ERC8a: Wide dispersive indoor use of processing aids in open systems<br>ERC8d: Wide dispersive outdoor use of processing aids in open systems | |
| Activity | Covers the use as a component of cleaning products including pouring/unloading from drums or containers; and exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping automated and by hand). | |
| **2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d** | | |
| No exposure assessment presented for the environment | | |
| **2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC10, PROC11, PROC13** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Covers percentage substance in the product up to 100 %. |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | > 10 kPa |
| Amount used | | 5 L/min (PROC11) |
| Frequency and duration of use | Covers daily exposures up to 8 hours | |
| | Avoid carrying out operation for more than 4 hours.(PROC4) | |
| Human factors not influenced by risk management | Exposed skin area | One hand, face side only. 240 cm² (PROC1, PROC3) |
| | Exposed skin area | Two hands face side only. 480 cm² (PROC2, PROC4, PROC8b, PROC13) |
| | Exposed skin area | Two hands 960 cm² (PROC8a, PROC10, PROC11) |

| | | |
|---|---|---|
| Other operational conditions affecting workers exposure | Assumes use at not more than 20°C above ambient temperature. | |
| | Avoid carrying out operation for more than 4 hours.(PROC4) | |
| | Room size | 1000 m3(PROC11) |
| Technical conditions and measures to control dispersion from source towards the worker | Automated process with (semi) closed systems Use in contained systems | Provide the operation with a properly sited receiving hood. (Efficiency: 80 %)(PROC2) |
| | Automated process with (semi) closed systems Use in contained systems Drum/batch transfers | Provide the operation with a properly sited receiving hood. (Efficiency: 80 %)(PROC3) |
| | Semi-automated process (e.g.: Semi-automatic application of floor care and maintenance products) | Provide the operation with a properly sited receiving hood. (Efficiency: 80 %)(PROC4) |
| | Filling/ preparation of equipment from drums or containers. Non-dedicated facility | Limit the substance content in the product to 5 %. or Ensure material transfers are under containment or extract ventilation.(PROC8a) |
| | Filling/ preparation of equipment from drums or containers. Dedicated facility | Limit the substance content in the product to 5 %. or Ensure material transfers are under containment or extract ventilation.(PROC8b) |
| | Cleaning with low-pressure washers Rolling, Brushing no spraying | Limit the substance content in the product to 5 %.(PROC10) |
| | Cleaning with high pressure washers Spraying | Use long handled tools where possible. Limit the substance content in the product to 3% Avoid carrying out operations for more than 200 min(PROC11) |
| | Dipping, immersion and pouring | Provide the operation with a properly sited receiving hood. (Efficiency: 80 %)(PROC13) |
| | Storage with occasional controlled exposure | Ensure material transfers are under containment or extract ventilation. (Efficiency: 80 %)(PROC2) |
| Organisational measures to prevent /limit releases, dispersion and exposure | Ensure that the direction of airflow is clearly away from the worker. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m).(PROC11) | |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Efficiency: 90 %)(PROC11) | |

## 3. Exposure estimation and reference to its source

**Environment**

No exposure assessment presented for the environment.

**Workers**

PROC11: RISKOFDERM V2.1

PROC11: StoffenManager (inhalation exposure)

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC10, PROC13: Use of ECETOC TRA Version 2 with modifications.

| Contributing Scenario | Specific conditions | Exposure routes | Level of Exposure | RCR |
|---|---|---|---|---|
| PROC1, PROC3, PROC8b | --- | worker dermal, short and long term - systemic | 0,34mg/kg bw/day | 0,008 |
| PROC1 | --- | Worker - inhalative, long-term - systemic | 0,13mg/m3 | 0,0005 |
| PROC1 | --- | Worker - inhalative, short-term - systemic | 0,53mg/m3 | 0,002 |
| PROC2 | --- | worker dermal, short and long term - systemic | 1,37mg/kg bw/day | 0,034 |
| PROC2 | --- | Worker - inhalative, long-term - systemic | 13,33mg/m3 | 0,051 |
| PROC2 | --- | Worker - inhalative, short-term - systemic | 53,33mg/m3 | 0,205 |
| PROC3 | --- | Worker - inhalative, long-term - systemic | 26,67mg/m3 | 0,103 |
| PROC3 | --- | Worker - inhalative, short-term - systemic | 106,67mg/m3 | 0,440 |
| PROC4 | --- | worker dermal, short and long term - systemic | 6,86mg/kg bw/day | 0,171 |
| PROC4 | --- | Worker - inhalative, long-term - systemic | 40,00mg/m3 | 0,154 |
| PROC4 | --- | Worker - inhalative, short-term - systemic | 160,00mg/m3 | 0,615 |
| PROC8a | --- | worker dermal, short and long term - systemic | 0,68mg/kg bw/day | 0,017 |
| PROC8a, PROC10 | --- | Worker - inhalative, long-term - systemic | 33,33mg/m3 | 0,128 |
| PROC8a, PROC10 | --- | Worker - inhalative, short-term - systemic | 66,67mg/m3 | 0,256 |
| PROC8b | --- | Worker - inhalative, long-term - systemic | 16,67mg/m3 | 0,064 |
| PROC8b | --- | Worker - inhalative, | 33,34mg/m3 | 0,128 |

| | | | | |
|---|---|---|---|---|
| | | short-term - systemic | | |
| PROC10 | --- | worker dermal, short and long term - systemic | 1,37mg/kg bw/day | 0,034 |
| PROC11 | --- | worker inhalation, acute and long term - systemic | 134,1mg/m3 | 0,516 |
| PROC11 | --- | worker dermal, short and long term - systemic | 7,24mg/kg bw/day | 0,181 |
| PROC13 | --- | worker dermal, short and long term - systemic | 13,71mg/kg bw/day | 0,343 |
| PROC13 | --- | Worker - inhalative, long-term - systemic | 66,67mg/m3 | 0,256 |
| PROC13 | --- | Worker - inhalative, long-term - systemic | 133,33mg/m3 | 0,513 |

**4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario**

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Assumes a good basic standard of occupational hygiene is implemented.

| **1. Short title of Exposure Scenario 7: Use in cleaning agents** | | |
|---|---|---|
| Main User Groups | SU 21: Consumer uses: Private households (= general public = consumers) | |
| Chemical product category | PC35: Washing and cleaning products | |
| Environmental Release Categories | ERC8a: Wide dispersive indoor use of processing aids in open systems<br>ERC8d: Wide dispersive outdoor use of processing aids in open systems | |
| **2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d** | | |
| No exposure assessment presented for the environment | | |
| **2.2 Contributing scenario controlling consumer exposure for: PC35: Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners )** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product : 0% - 2,5% |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | > 10 kPa |
| Amount used | Amount used per event | 1 kg |
| | Relevant for inhalative exposure estimates. | |
| | Amount used per event | 0,16 g |
| | Relevant for dermal exposure estimates. | |
| Frequency and duration of use | Exposure duration per event | 2 h |
| | Frequency of use | 102 days/year |
| Human factors not influenced by risk management | For each use event, assumes swallowed amount of | 0,4 g (gram)(PC35) |
| Other given operational conditions affecting consumers exposure | Ventilation rate per hour | 0,5 |
| | Covers use in a one car garage (34 m3) under typical ventilation. | |
| **2.3 Contributing scenario controlling consumer exposure for: PC35: Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product : 0% - 5% |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | > 10 kPa |
| Amount used | Amount used per event | 16,2 g |
| Frequency and duration of use | Exposure duration per event | 1 h |

| | | |
|---|---|---|
| | Frequency of use | 365 days/year |
| Human factors not influenced by risk management | Exposed skin area | Two hands 960 cm² |
| Other given operational conditions affecting consumers exposure | Room size | 15 m3 |
| | Ventilation rate per hour | 2,5 |
| Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene) | Consumer Measures | Ensure spraying away from persons. |

## 3. Exposure estimation and reference to its source

**Environment**

No exposure assessment presented for the environment.

**Consumers**

ECETOC TRA consumer v3. The ConsExpo model has been used to estimate consumer exposures unless otherwise indicated.

## 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
For further information on the assessment method, see:
http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

| **1. Short title of Exposure Scenario 8: Use in fuel** | | |
|---|---|---|
| Main User Groups | SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites | |
| Sectors of end-use | SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys) | |
| Process categories | PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions<br>PROC2: Use in closed, continuous process with occasional controlled exposure<br>PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition<br>PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities<br>PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities<br>PROC16: Using material as fuel sources, limited exposure to unburned product to be expected | |
| Environmental Release Categories | ERC7: Industrial use of substances in closed systems | |
| Activity | Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste. | |
| **2.1 Contributing scenario controlling environmental exposure for: ERC7** | | |
| No exposure assessment presented for the environment | | |
| **2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Covers percentage substance in the product up to 100 %. |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | > 10 kPa |
| Frequency and duration of use | Covers daily exposures up to 8 hours | |
| Human factors not influenced by risk management | Exposed skin area | One hand, face side only. 240 cm² (PROC1, PROC3, PROC16) |
| | Exposed skin area | Two hands face side only. 480 cm² (PROC2, PROC8b) |
| | Exposed skin area | Two hands 960 cm² (PROC8a) |
| Other operational conditions affecting workers exposure | Assumes use at not more than 20°C above ambient temperature. | |
| Technical conditions and measures to control dispersion from source towards the worker | General exposures Closed systems with occasional controlled exposure | Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC2) |

| | | |
|---|---|---|
| | General exposures<br>Closed systems<br>Batch process | Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC3) |
| | Vessel and container cleaning | Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC8a) |
| | Drum/batch transfers | Provide extract ventilation to points where emissions occur. (Efficiency: 97 %)(PROC8b) |
| | Storage<br>with occasional controlled exposure | Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC2) |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear suitable gloves tested to EN374. | |

## 3. Exposure estimation and reference to its source

**Environment**

No exposure assessment presented for the environment.

**Workers**

PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16: Use of ECETOC TRA Version 2 with modifications.

| Contributing Scenario | Specific conditions | Exposure routes | Level of Exposure | RCR |
|---|---|---|---|---|
| PROC1, PROC3, PROC16 | --- | worker dermal, short and long term - systemic | 0,34mg/kg bw/day | 0,008 |
| PROC1 | --- | Worker - inhalative, long-term - systemic | 0,01mg/m3 | 0,00004 |
| PROC1 | --- | Worker - inhalative, short-term - systemic | 0,05mg/m3 | 0,0002 |
| PROC2 | --- | worker dermal, short and long term - systemic | 1,37mg/kg bw/day | 0,034 |
| PROC2 | --- | Worker - inhalative, long-term - systemic | 6,67mg/m3 | 0,026 |
| PROC2 | --- | Worker - inhalative, short-term - systemic | 26,67mg/m3 | 0,103 |
| PROC3 | --- | Worker - inhalative, long-term - systemic | 13,33mg/m3 | 0,051 |
| PROC3 | --- | Worker - inhalative, short-term - systemic | 53,33mg/m3 | 0,205 |
| PROC8a | --- | worker dermal, short and long term - systemic | 13,71mg/kg bw/day | 0,343 |
| PROC8a, PROC16 | --- | Worker - inhalative, long-term - systemic | 33,33mg/m3 | 0,128 |

| | | | | |
|---|---|---|---|---|
| PROC8a, PROC16 | --- | Worker - inhalative, short-term - systemic | 66,67mg/m3 | 0,256 |
| PROC8b | --- | worker dermal, short and long term - systemic | 6,86mg/kg bw/day | 0,171 |
| PROC8b | --- | Worker - inhalative, long-term - systemic | 6,00mg/m3 | 0,023 |
| PROC8b | --- | Worker - inhalative, short-term - systemic | 12,00mg/m3 | 0,046 |

**4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario**

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Assumes a good basic standard of occupational hygiene is implemented.

| **1. Short title of Exposure Scenario 9: Use in fuel** | | |
|---|---|---|
| Main User Groups | SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen) | |
| Process categories | PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions<br>PROC2: Use in closed, continuous process with occasional controlled exposure<br>PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition<br>PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities<br>PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities<br>PROC16: Using material as fuel sources, limited exposure to unburned product to be expected | |
| Environmental Release Categories | ERC8b: Wide dispersive indoor use of reactive substances in open systems<br>ERC8e: Wide dispersive outdoor use of reactive substances in open systems<br>ERC9a: Wide dispersive indoor use of substances in closed systems<br>ERC9b: Wide dispersive outdoor use of substances in closed systems | |
| Activity | Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste. | |
| **2.1 Contributing scenario controlling environmental exposure for: ERC8b, ERC8e, ERC9a, ERC9b** | | |
| No exposure assessment presented for the environment | | |
| **2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Covers percentage substance in the product up to 100 %. |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | > 10 kPa |
| Frequency and duration of use | Covers daily exposures up to 8 hours | |
| Human factors not influenced by risk management | Exposed skin area | One hand, face side only. 240 cm² (PROC1, PROC3, PROC16) |
| | Exposed skin area | Two hands face side only. 480 cm² (PROC2, PROC8b) |
| | Exposed skin area | Two hands 960 cm² (PROC8a) |
| Other operational conditions affecting workers exposure | Assumes use at not more than 20°C above ambient temperature. | |
| Technical conditions and measures to control dispersion from source towards the worker | General exposures Closed systems with occasional controlled exposure | Provide extract ventilation to points where emissions occur. (Efficiency: 80 %)(PROC2) |

| | | |
|---|---|---|
| | General exposures (closed systems) Batch process | Provide extract ventilation to points where emissions occur. (Efficiency: 80 %)(PROC3) |
| | Bulk transfers | Use drum pumps.<br>Avoid carrying out operation for more than 1 hour.<br>alternatively<br>Limit the substance content in the product to 5 %.(PROC8a, PROC8b) |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear suitable gloves tested to EN374. | |

## 3. Exposure estimation and reference to its source

**Environment**

No exposure assessment presented for the environment.

**Workers**

PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16: Use of ECETOC TRA Version 2 with modifications.

| Contributing Scenario | Specific conditions | Exposure routes | Level of Exposure | RCR |
|---|---|---|---|---|
| PROC1, PROC3, PROC8b, PROC16 | --- | worker dermal, short and long term - systemic | 0,34mg/kg bw/day | 0,008 |
| PROC1 | --- | Worker - inhalative, long-term - systemic | 0,13mg/m3 | 0,0005 |
| PROC1 | --- | Worker - inhalative, short-term - systemic | 0,53mg/m3 | 0,002 |
| PROC2 | --- | worker dermal, short and long term - systemic | 1,37mg/kg bw/day | 0,034 |
| PROC2 | --- | Worker - inhalative, long-term - systemic | 13,33mg/m3 | 0,051 |
| PROC2 | --- | Worker - inhalative, short-term - systemic | 53,33mg/m3 | 0,205 |
| PROC3 | --- | Worker - inhalative, long-term - systemic | 26,67mg/m3 | 0,103 |
| PROC3 | --- | Worker - inhalative, short-term - systemic | 106,67mg/m3 | 0,440 |
| PROC8a | --- | worker dermal, short and long term - systemic | 0,68mg/kg bw/day | 0,017 |
| PROC8a | --- | Worker - inhalative, long-term - systemic | 33,33mg/m3 | 0,128 |
| PROC8a | --- | Worker - inhalative, short-term - systemic | 66,67mg/m3 | 0,256 |

| | | | | |
|---|---|---|---|---|
| PROC8b | --- | Worker - inhalative, long-term - systemic | 16,67mg/m3 | 0,064 |
| PROC8b | --- | Worker - inhalative, short-term - systemic | 33,34mg/m3 | 0,128 |
| PROC16 | --- | Worker - inhalative, long-term - systemic | 66,67mg/m3 | 0,256 |
| PROC16 | --- | Worker - inhalative, short-term - systemic | 133,34mg/m3 | 0,513 |

**4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario**

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Assumes a good basic standard of occupational hygiene is implemented.

| **1. Short title of Exposure Scenario 10: Use in fuel** | | |
|---|---|---|
| Main User Groups | SU 21: Consumer uses: Private households (= general public = consumers) | |
| Chemical product category | PC13: Fuels | |
| Environmental Release Categories | ERC8b: Wide dispersive indoor use of reactive substances in open systems<br>ERC8e: Wide dispersive outdoor use of reactive substances in open systems<br>ERC9a: Wide dispersive indoor use of substances in closed systems<br>ERC9b: Wide dispersive outdoor use of substances in closed systems | |
| **2.1 Contributing scenario controlling environmental exposure for: ERC8b, ERC8e, ERC9a, ERC9b** | | |
| No exposure assessment presented for the environment | | |
| **2.2 Contributing scenario controlling consumer exposure for: PC13: Liquid: Automotive Refuelling** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Covers percentage substance in the product up to 100 %. |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | > 10 kPa |
| Amount used | Amount used per event | 37,5 kg |
| Frequency and duration of use | Exposure duration per event | 3 min |
| | Frequency of use | 104 days/year |
| Human factors not influenced by risk management | Exposed skin area | Palm of one Hand 210 cm² |
| Other given operational conditions affecting consumers exposure | Outdoor use | |
| **2.3 Contributing scenario controlling consumer exposure for: PC13: Liquid: Lamp oil** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product : 0% - 80% |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | > 10 kPa |
| Amount used | Amount used per event | 800 g |
| Frequency and duration of use | Exposure duration per event | 1 min |
| | Frequency of use | 104 days/year |
| Human factors not influenced by risk management | Exposed skin area | Palm of one Hand 210 cm² |
| Other given operational | Room size | 20 m3 |

| | | |
|---|---|---|
| conditions affecting consumers exposure | Ventilation rate per hour | 0,5 |

## 3. Exposure estimation and reference to its source

**Environment**

No exposure assessment presented for the environment.

**Consumers**

PC13: Liquid: Lamp oil: ECETOC TRA

PC13: Liquid: Automotive Refuelling, PC13: Liquid: Lamp oil: ConsExpo

| Contributing Scenario | Specific conditions | Exposure routes | Level of Exposure | RCR |
|---|---|---|---|---|
| PC13: Liquid: Automotive Refuelling | --- | Consumer - inhalative, long-term - systemic | 0,287mg/m3 | --- |
| PC13: Liquid: Automotive Refuelling | --- | Consumer - inhalative, short-term - systemic | 41,3mg/m3 | --- |
| PC13: Liquid: Lamp oil | --- | Consumer dermal, acute and long term - systemic | 0,34mg/kg bw/day | --- |
| PC13: Liquid: Lamp oil | --- | Consumer - inhalative, long-term - systemic | 4,67mg/m3 | --- |
| PC13: Liquid: Lamp oil | --- | Consumer - inhalative, short-term - systemic | 9,34mg/m3 | --- |

## 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
For further information on the assessment method, see:
http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

| **1. Short title of Exposure Scenario 11: Use in laboratories** | | |
|---|---|---|
| Main User Groups | SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites | |
| Process categories | PROC10: Roller application or brushing<br>PROC15: Use as laboratory reagent | |
| Environmental Release Categories | ERC4: Industrial use of processing aids in processes and products, not becoming part of articles | |
| **2.1 Contributing scenario controlling environmental exposure for: ERC4** | | |
| No exposure assessment presented for the environment | | |
| **2.2 Contributing scenario controlling worker exposure for: PROC10, PROC15** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product : 0% - 80% |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | > 10 kPa |
| Frequency and duration of use | Covers daily exposures up to 8 hours | |
| Human factors not influenced by risk management | Exposed skin area | Two hands 960 cm² (PROC10) |
| | Exposed skin area | One hand, face side only. 240 cm² (PROC15) |
| Other operational conditions affecting workers exposure | Assumes use at not more than 20°C above ambient temperature. | |
| Technical conditions and measures to control dispersion from source towards the worker | Cleaning<br>Rolling, Brushing<br>Vessel and container cleaning | Carefully pour from containers.<br>Retain drain downs in sealed storage pending disposal or for subsequent recycle.<br>Handle in a fume cupboard or under extract ventilation. (Efficiency: 90 %)(PROC10) |
| | Laboratory activities small scale | Handle in a fume cupboard or under extract ventilation. (Efficiency: 90 %)(PROC15) |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear suitable gloves tested to EN374. | |

**3. Exposure estimation and reference to its source**

**Environment**

No exposure assessment presented for the environment.

**Workers**

PROC10, PROC15: Use of ECETOC TRA Version 2 with modifications.

| Contributing Scenario | Specific conditions | Exposure routes | Level of Exposure | RCR |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| PROC10 | --- | worker dermal, short and long term - systemic | 21,94mg/kg bw/day | 0,549 |
| PROC10 | --- | Worker - inhalative, long-term - systemic | 26,67mg/m3 | 0,103 |
| PROC10 | --- | Worker - inhalative, short-term - systemic | 53,34mg/m3 | 0,205 |
| PROC15 | --- | worker dermal, short and long term - systemic | 0,34mg/kg bw/day | 0,008 |
| PROC15 | --- | Worker - inhalative, long-term - systemic | 6,67mg/m3 | 0,026 |
| PROC15 | --- | Worker - inhalative, short-term - systemic | 13,33mg/m3 | 0,051 |

**4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario**

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Assumes a good basic standard of occupational hygiene is implemented.

| **1. Short title of Exposure Scenario 12: Use in laboratories** | | |
|---|---|---|
| Main User Groups | SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen) | |
| Process categories | PROC10: Roller application or brushing<br>PROC15: Use as laboratory reagent | |
| Environmental Release Categories | ERC8a: Wide dispersive indoor use of processing aids in open systems | |
| **2.1 Contributing scenario controlling environmental exposure for: ERC8a** | | |
| No exposure assessment presented for the environment | | |
| **2.2 Contributing scenario controlling worker exposure for: PROC10, PROC15** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Covers percentage substance in the product up to 100 %. |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | > 10 kPa |
| Frequency and duration of use | Covers daily exposures up to 8 hours | |
| Human factors not influenced by risk management | Exposed skin area | Two hands 960 cm² (PROC10) |
| | Exposed skin area | One hand, face side only. 240 cm² (PROC15) |
| Other operational conditions affecting workers exposure | Assumes use at not more than 20°C above ambient temperature. | |
| Technical conditions and measures to control dispersion from source towards the worker | Cleaning<br>Rolling, Brushing | Carefully pour from containers.<br>Limit the substance content in the product to 5 %.(PROC10) |
| | Laboratory activities small scale | Handle in a fume cupboard or under extract ventilation. (Efficiency: 80 %)(PROC15) |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear suitable gloves tested to EN374. | |

**3. Exposure estimation and reference to its source**

**Environment**

No exposure assessment presented for the environment.

**Workers**

PROC10, PROC15: Use of ECETOC TRA Version 2 with modifications.

| Contributing Scenario | Specific conditions | Exposure routes | Level of Exposure | RCR |
|---|---|---|---|---|
| PROC10 | --- | worker dermal, short and long term - systemic | 1,37mg/kg bw/day | 0,034 |

| | | | | |
|---|---|---|---|---|
| PROC10 | --- | Worker - inhalative, long-term - systemic | 33,33mg/m3 | 0,128 |
| PROC10 | --- | Worker - inhalative, short-term - systemic | 66,67mg/m3 | 0,256 |
| PROC15 | --- | worker dermal, short and long term - systemic | 0,34mg/kg bw/day | 0,008 |
| PROC15 | --- | Worker - inhalative, long-term - systemic | 13,33mg/m3 | 0,051 |
| PROC15 | --- | Worker - inhalative, short-term - systemic | 26,67mg/m3 | 0,103 |

**4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario**

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Assumes a good basic standard of occupational hygiene is implemented.

| **1. Short title of Exposure Scenario 13: Use in de-icing and anti-icing applications** | | |
|---|---|---|
| Main User Groups | SU 21: Consumer uses: Private households (= general public = consumers) | |
| Chemical product category | PC4: Anti-Freeze and de-icing products | |
| Environmental Release Categories | ERC8a: Wide dispersive indoor use of processing aids in open systems<br>ERC8d: Wide dispersive outdoor use of processing aids in open systems | |
| **2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d** | | |
| No exposure assessment presented for the environment | | |
| **2.2 Contributing scenario controlling consumer exposure for: PC4: Washing car window** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product : 0% - 2,5% |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | > 10 kPa |
| Amount used | Amount used per event | 100 g |
| Frequency and duration of use | Exposure duration per event | 2 h |
| | Frequency of use | 102 days/year |
| Human factors not influenced by risk management | Exposed skin area | Hands and forearms. 1900 cm² |
| Other given operational conditions affecting consumers exposure | Ventilation rate per hour | 0,5 |
| | Covers use in a one car garage (34 m3) under typical ventilation. | |
| **2.3 Contributing scenario controlling consumer exposure for: PC4: Lock de-icer** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Concentration of substance in product : 0% - 5% |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | > 10 kPa |
| Amount used | Amount used per event | 16,2 g |
| Frequency and duration of use | Exposure duration per event | 1 h |
| | Frequency of use | 365 days/year |
| Human factors not influenced by risk management | Exposed skin area | Two hands 960 cm² |
| Other given operational conditions affecting consumers exposure | Room size | 15 m3 |
| | Ventilation rate per hour | 2,5 |

## 3. Exposure estimation and reference to its source

**Environment**

No exposure assessment presented for the environment.

**Consumers**

ECETOC TRA consumer v3. The ConsExpo model has been used to estimate consumer exposures unless otherwise indicated.

## 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
For further information on the assessment method, see:
http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

| **1. Short title of Exposure Scenario 14: Use as water treatment chemicals** | | |
|---|---|---|
| Main User Groups | SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites | |
| Process categories | PROC2: Use in closed, continuous process with occasional controlled exposure | |
| Environmental Release Categories | ERC4: Industrial use of processing aids in processes and products, not becoming part of articles<br>ERC6b: Industrial use of reactive processing aids | |
| **2.1 Contributing scenario controlling environmental exposure for: ERC4, ERC6b** | | |
| No exposure assessment presented for the environment | | |
| **2.2 Contributing scenario controlling worker exposure for: PROC2** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Covers percentage substance in the product up to 100 %. |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | > 10 kPa |
| Frequency and duration of use | Covers daily exposures up to 8 hours | |
| Human factors not influenced by risk management | Exposed skin area | Two hands face side only. 480 cm² |
| Other operational conditions affecting workers exposure | Indoor use | |
| | Assumes use at not more than 20°C above ambient temperature. | |
| Technical conditions and measures to control dispersion from source towards the worker | Drain or remove substance from equipment prior to break-in or maintenance. Retain drain downs in sealed storage pending disposal or for subsequent recycle.<br>Carefully pour from containers.<br>Provide local exhaust ventilation (LEV). (Efficiency: 90 %)(PROC2) | |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear suitable gloves tested to EN374. | |

**3. Exposure estimation and reference to its source**

**Environment**

No exposure assessment presented for the environment.

**Workers**

PROC2: Use of ECETOC TRA Version 2 with modifications.

| Contributing Scenario | Specific conditions | Exposure routes | Level of Exposure | RCR |
|---|---|---|---|---|
| PROC2 | --- | worker dermal, short and long term - systemic | 1,37mg/kg bw/day | 0,034 |

| | | | | |
|---|---|---|---|---|
| PROC2 | --- | Worker - inhalative, long-term - systemic | 6,67mg/m3 | 0,026 |
| PROC2 | --- | Worker - inhalative, short-term - systemic | 26,67mg/m3 | 0,103 |

**4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario**

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Assumes a good basic standard of occupational hygiene is implemented.

| **1. Short title of Exposure Scenario 15: Use in oil and gas field drilling and production operations** | | |
|---|---|---|
| Main User Groups | SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen) | |
| Process categories | PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises<br>PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)<br>PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities<br>PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities | |
| Environmental Release Categories | ERC9b: Wide dispersive outdoor use of substances in closed systems | |
| **2.1 Contributing scenario controlling environmental exposure for: ERC9b** | | |
| No exposure assessment presented for the environment | | |
| **2.2 Contributing scenario controlling worker exposure for: PROC4, PROC5, PROC8a, PROC8b** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Covers percentage substance in the product up to 100 %. |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | > 10 kPa |
| Frequency and duration of use | Exposure duration per day | < 4 h(PROC4) |
| | Frequency of use | < 240 days/year(PROC5, PROC8a, PROC8b) |
| | Covers daily exposures up to 8 hours(PROC5, PROC8a, PROC8b) | |
| Human factors not influenced by risk management | Exposed skin area | Two hands face side only. 480 cm² (PROC4, PROC5, PROC8b) |
| | Exposed skin area | Two hands 960 cm² (PROC8a) |
| Other operational conditions affecting workers exposure | Limit the substance content in the product to 5 %.(PROC5, PROC8a, PROC8b) | |
| | Indoor use | |
| Technical conditions and measures to control dispersion from source towards the worker | Provide local exhaust ventilation (LEV). (Efficiency: 80 %)(PROC4) | |
| | | |
| **3. Exposure estimation and reference to its source** | | |
| **Environment** | | |
| No exposure assessment presented for the environment. | | |
| **Workers** | | |

PROC4, PROC5, PROC8a, PROC8b: ECETOC TRA worker v3

| Contributing Scenario | Specific conditions | Exposure routes | Level of Exposure | RCR |
|---|---|---|---|---|
| PROC4 | --- | worker dermal, short and long term - systemic | 6,86mg/kg bw/day | 0,171 |
| PROC4 | --- | Worker - inhalative, long-term - systemic | 40,00mg/m3 | 0,154 |
| PROC4 | --- | Worker - inhalative, short-term - systemic | 160,00mg/m3 | 0,615 |
| PROC5, PROC8a | --- | worker dermal, short and long term - systemic | 0,68mg/kg bw/day | 0,017 |
| PROC5, PROC8a | --- | Worker - inhalative, long-term - systemic | 33,33mg/m3 | 0,128 |
| PROC5, PROC8a | --- | Worker - inhalative, short-term - systemic | 66,67mg/m3 | 0,256 |
| PROC8b | --- | worker dermal, short and long term - systemic | 0,34mg/kg bw/day | 0,008 |
| PROC8b | --- | Worker - inhalative, long-term - systemic | 16,67mg/m3 | 0,064 |
| PROC8b | --- | Worker - inhalative, short-term - systemic | 33,34mg/m3 | 0,128 |

## 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

| **1. Short title of Exposure Scenario 16: Use in oil and gas field drilling and production operations** | | |
|---|---|---|
| Main User Groups | SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites | |
| Process categories | PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions<br>PROC2: Use in closed, continuous process with occasional controlled exposure<br>PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition<br>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises<br>PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)<br>PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities<br>PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities | |
| Environmental Release Categories | ERC4: Industrial use of processing aids in processes and products, not becoming part of articles | |
| **2.1 Contributing scenario controlling environmental exposure for: ERC4** | | |
| No exposure assessment presented for the environment | | |
| **2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b** | | |
| Product characteristics | Concentration of the Substance in Mixture/Article | Covers percentage substance in the product up to 100 %. |
| | Physical Form (at time of use) | liquid |
| | Vapour pressure | > 10 kPa |
| Frequency and duration of use | Covers daily exposures up to 8 hours | |
| Other operational conditions affecting workers exposure | Assumes use at not more than 20°C above ambient temperature. | |
| Technical conditions and measures to control dispersion from source towards the worker | Bulk transfers | Limit the substance content in the product to 5 %.(PROC8a, PROC8b) |
| | Filling/ preparation of equipment from drums or containers. | Limit the substance content in the product to 5 %.(PROC8a, PROC8b) |
| | Drill floor operations<br>General exposures<br>Closed systems | Ensure operation is undertaken outdoors.(PROC4) |
| | Drill floor operations<br>General exposures<br>Open systems | Ensure operation is undertaken outdoors.(PROC4) |

| | | |
|---|---|---|
| | Operation of solids filtering equipment | Ensure material transfers are under containment or extract ventilation.<br>Avoid carrying out operation for more than 4 hours.(PROC4) |
| | Treatment and disposal of filtered solids | Ensure material transfers are under containment or extract ventilation.(PROC3) |
| | Mixing operations (open systems) | Limit the substance content in the product to 5 %.(PROC5) |
| | Equipment cleaning and maintenance | Limit the substance content in the product to 5 %.<br>Provide a good standard of general ventilation.<br>Natural ventilation is from doors, windows etc.<br>Controlled ventilation means air is supplied or removed by a powered fan.(PROC2, PROC8a, PROC8b) |
| | Batch process with occasional controlled exposure | Provide extract ventilation to points where emissions occur.(PROC3) |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. | |

## 3. Exposure estimation and reference to its source

**Environment**

No exposure assessment presented for the environment.

**Workers**

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

## 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Health
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: http://www.ecetoc.org/tra
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Assumes a good basic standard of occupational hygiene is implemented.

| DISTRIBUTOR COMPANY INFORMATION | | | |
|---|---|---|---|
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| Management systems: certifications | ISO9001, FSSC22000, GMP+Feed, ESAD, RSPO, Rainforest Alliance | ISO 9001, ISO 14001, ISO 22000, ISO22716, FSSC 22000, ISO45001, GMP+ Feed, ESAD, AEO, SKAL, RSPO, Rainforest Alliance | ISO9001, ISO45001, ISO14001, FSSC22000, Certificate of acceptability for Food Premises R638, Ecovadis Stustainability Rating (Platinum), SABS 1827, SABS 1853, B-BBEE, Rainforest Alliance, Sedex |